

REMARKS

This is intended as a full and complete response to the Final Office Action dated July 14, 2005, having a shortened statutory period for response set to expire on October 14, 2005. Claims 1 and 3-14 remain pending in the application and stand rejected. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1, 4-5, 7 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Juday (U.S. 6,680,797) in view of Sorin et al. (U.S. 6,208,774). Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Juday in view of Lee et al. (U.S. 6,522,467). Claims 2, 8-10, 12, 13 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Juday in view of Chen (U.S. 2003/0103718).

Applicant notes that claim 2 was previously cancelled and that claim 3 has not been addressed by the Examiner. As such, Applicant believes that claim 3 is in condition for allowance and allowance of the same is respectfully requested.

Regarding the base claims 1, 7, and 11, the Examiner admits that Juday "fails to disclose the P-polarization beam and rotated S-polarization beams are separate from one another and the beam waists of the P and S beams [sic] located at a center of a liquid crystal cavity." The Examiner, however, asserts that Sorin discloses a liquid crystal cavity that accepts P and S polarization beams "to provide an optical switching element that operates o [sic] light independent of polarization thereby overcoming losses inherent to polarization dependent waveguides."

Applicant respectfully traverses the rejection on grounds that a combination of Juday and Sorin et al. does not teach, show, or suggest beam waists of the P-polarization beam and the rotated S-polarization beam are located substantially on a center of a liquid crystal cavity in the liquid crystal tunable filter, as recited in base claims 1 and 7, and claims dependent thereon. Further, Applicant respectfully traverses the rejection on grounds that a combination of Juday and Sorin et al. does not teach, show, or suggest beam waists of the first beam and the second beam are located substantially on a center of a liquid crystal cavity in the liquid crystal tunable filter, as recited in base claim 11 and claims dependent thereon.

Juday discloses a polarization-independent optical switch in which a polarization beam splitter (10) is used to split an incoming beam into two beams polarized independently of one another. One of these two beams is passed through a wave plate (20), which changes the

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polarization of this one beam to match that of the other beam. The two beams are then recombined into a single beam by beam combiner (30) and passed through a controllable spatial light modulator (SLM) (70), which includes a reconfigurable liquid crystal device (35) that can be controlled to diffract the combined beam in any desired direction. The ability to diffract the combined beam in any desired direction provides the disclosed system with its switching functionality. See generally Juday at col. 9, lines 26-67. The stated purpose of Juday is to provide a polarization-independent optical switch that is capable of "handling" incoming light with arbitrary polarization states to produce effects that are "invariant" to the incoming polarization states. See Juday at col. 2, lines 60-64 and Abstract.

Sorin discloses a light switch for routing a light signal between an input port and an output port. The light switch (300) transmits light between input fiber (301) and output fiber (302) in one state and blocks the transmission of light between the fibers when the switch is in the other state. The input light signal is first separated into two polarized light beams (308) and (309) having orthogonal polarizations by walk-off crystal (310). The polarization of light beam (309) is rotated through 90 degrees by beam rotator (312). The two light beams enter a pair of switchable waveguides where the light signal on path (308) is rotated through 90 degrees by polarization rotator (317). The two light beams are then recombined in walk-off crystal (318). See Sorin at col. 3, line 36 through col. 4, line 34. Sorin further discloses that "if the entry window of the beam to be rotated has an orientation layer that is parallel to the direction of polarization of the input light beam, then a region of gradual change in liquid crystal orientation will be created between the entrance window and the remainder of the liquid crystal layer. This region will rotate the incoming polarization vector of the light to match the desired polarization within the waveguide." Id at col. 4, ll. 24-33.

Accordingly, neither reference teaches or suggests what to do with the beam waists as recited in the claimed invention. The beam waists directed to the center of a liquid crystal cavity is not inherent to the teachings of the references. As explained in the Applicant's specification at page 4, ll. 5-11, the invention significantly reduces the parallelism requirement for a liquid crystal cavity by locating the beam waists on the center of the cavity. Hence, the claimed invention requires that the P-polarization beam and the rotated S-polarization beam are received and processed by the liquid crystal tunable filter as separate beams, and the beam waists of the P-polarization beam and the rotated S-polarization beam are located substantially on a center of a

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liquid crystal cavity in a liquid crystal tunable filter. In sharp contrast, neither Juday nor Sorin contains any teachings whatsoever regarding locating the beam waists of lift beams to reduce parallism requirements. In fact, both Juday and Sorin are completely silent regarding beam waists. Therefore, a combination of the references does not teach, show, or suggest the claimed invention, and withdrawal of the rejection and allowance of the claims is respectfully requested.

Applicants further traverse the rejection on grounds that the Examiner has not established a *prima facie* case of obviousness. To establish *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. See In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Further, the teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, not in the applicants' disclosure. See M.P.E.P. § 2143, citing In re Vaeck, 947 F.2d 488 (Fed. Cir. 1991). Still further, the examiner must *particularly* identify any suggestion, teaching or motivation from *within* the references to combine the references (emphasis added). See In Re Dembiczak, 50 USPQ2d 1614 (Fed. Cir. 1999). The mere recitation of a combination of references does not amount to particularly identifying a suggestion, teaching, or a motivation to combine the references. Finally, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Here, the Examiner has merely asserted that "it would have been obvious... to separate from one another and the beam waists of the P and S beams located at a center of a liquid crystal cavity... to provide an optical switching element that operates o [sic] light independent of polarization thereby overcoming losses inherent to polarization dependent waveguides." This is nothing more than a legal conclusion based on impermissible hindsight. As stated above, the references make no mention or suggestion regarding the location of beam waists, and the Examiner has provided no recitation or support from the references themselves to substantiate the Examiner's conclusion. Insofar as the record shows, if such statement is true, it has been gleaned from the Applicant's own specification, which is nothing more than impermissible hindsight. Unsupported legal conclusions and impermissible hindsight may not provide a proper basis to support a rejection based on *prima facie* obviousness. Therefore, the Examiner erred in rejecting the claims under 35. U.S.C. §103(a). Withdrawal of the rejections and allowance of the claims is respectfully requested.

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The secondary references made of record are noted. However, it is believed that the secondary references are no more pertinent to the Applicant's disclosure than the primary references cited in the Final Office Action. Therefore, Applicant believes that a detailed discussion of the secondary references is not necessary for a full and complete response to this Final Office Action.

As the foregoing illustrate, no combination of the cited references teaches or suggests the limitation of locating the beam waists of the P-polarization beam and the rotated S-polarization beam substantially on the center of a liquid crystal cavity, as cited in independent claims 1, 7 and 11. These claims are therefore in condition for allowance, as well as all claims dependent thereon.

Having addressed all issues set out in the Final Office Action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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